## REMARKS

Prior to entry of this paper, Claims 1-3, 6-12, and 14-28 were pending. Claims 1-3, 8-12, and 14-28 were rejected. In this paper, Claims 6 and 28 are amended to correct clerical errors. Claims 1-3, 6-12, and 14-28 are currently pending. No new matter is added by way of this amendment. For at least the following reasons, Applicants respectfully submit that each of the presently pending claims is in condition for allowance.

### Claim Objections

It is respectfully submitted that the objections to Claims 6, 7, and 28 are moot.

### Claim Rejections

Claims 1-3, 8-12, and 14-28 were rejected under 35 U.S.C. §102(b) as being anticipated by Galambos et al. (U.S. Patent No. 6,570,522). Each of the rejections is respectfully traversed.

Claim 1 is respectfully submitted to be allowable at least because Galambos fails to disclose, "a first current source circuit that is arranged to provide a first local current at an output of the first amplifier circuit such that at least a portion of the first output current is prevented from being carried on the bus", as recited in Applicants' Claim 1.

The Office Action states that the current through resistor 25E of the circuit of FIG. 2 of Galambos is VCC/25E=I. It is respectfully submitted that this is incorrect. This would only be true if the other end of resistor 25E of the circuit of FIG. 2 of Galambos were held at ground. If one end of resistor 25E of the circuit of FIG. 2 of Galambos was tied to VCC (as shown) and the other end was tied to ground, then resistor 25E would in fact act as a current source providing a current of $VCC/R_{25E}$. But the other end of the resistor 25E of the circuit of FIG. 2 of Galambos is not tied to ground. Rather, the voltage at the other end of the resistor is determined by the current through it, that is, the voltage at the other end of resistor 25E is given by approximately $I*R_{25E}$ relative to VCC, i.e. $VCC-I*R_{25E}$, where I is the current through resistor R25, which is substantially equal to the sum of currents provided by each of the collectors connected to resistor 25E. Rather than acting as a

current source, resistor 25E of the circuit of FIG. 2 of Galambos acts as a load or a current-to-voltage converter.

Ohm's law indicates that, for a resistor, V=I*R, but whether a resistor acts as a current source depends on how the resistor is arranged in the circuit. If you place a fixed voltage drop V1 across the resistor, then according to Ohm's law, the resistor will provide a fixed current of I=V1/R. But if you tie one end of the resistor to VCC, and apply a current to the other end of the resistor, then, according to Ohm's law, the resistor will act as a current-to-voltage converter providing a voltage of VCC-I*R at the other end of the resistor.

Resistors 25A-25F of the circuit of FIG. 2 of Galambos act as loads or current-to-voltage converters. Resistor 25E of the circuit of FIG. 2 of Galambos does not prevent any portion of the current from being carried on the bus. In the circuit of FIG. 2 of Galambos, Resistor 25E does provide the current; rather it receives the current from the collector of transistor 24A (left), and does not alter how much current transistor 24A(left) provides to the bus.

For example, suppose that, in the circuit of FIG. 2 of Galambos, tail current source 10 is a 2 μA current source, and that the two inputs to amplifier 22A are equal. In this case, the collector current of 24A is 1μA, which goes on the bus that connects the collectors of transistor 24A(left), 24C(right), 24E(left), and 24G(right) to resistor 25E. All of the 1μA provided by transistor 24A(left) goes on the bus. Resistor 25E does not prevent any portion of the 1μA from going on the bus. The purpose of the resistor 25E is to act as the load which converts the 1μA to a voltage of VCC-1μA*$R_{25E}$ to be input to the comparator so that a voltage comparison may be performed (between this voltage and the voltage provided by resistor 25F).

Claims 2, 3, and 6-10 are respectfully submitted to be allowable at least because they depend from Claim 1.

Additionally, the rejection to Claim 10 is respectfully traversed at least because Galambos fails to meet the limitation, "the fraction of the first tail current is approximately half of the first tail current". The Office Action position is that the first local current is the current through resistor 25E of the circuit of FIG. 2 of Galambos. The current through resistor 25E of the circuit of FIG. 2 of Galambos is substantially equal to the sum of the provided collector currents. The current through resistor 25E of the circuit of FIG. 2 of Galambos would only be equal to half the tail current in the

case where the input voltage was equal to the reference voltage of the corresponding amplifier. The current through the resistor could be anywhere from zero to one times the tail current. Since zero current is not approximately equal to half the tail current, and since one times the tail current is not approximately equal to half of the tail current, the claim limitation is not met.

The rejections to Claims 11, 12, 14, and 17-19 are respectfully traversed. Claim 11 is respectfully submitted to be allowable at least because Galambos fails to disclose, "a first current source circuit, wherein the first current source circuit is coupled to an output of a first of the portion of the plurality of transconductance circuits, and wherein the first current source circuit is arranged to provide a first local current at the output of the first transconductance circuit such that a maximum magnitude of current density is decreased on at least the first bus of the plurality of buses", as recited in Applicants' Claim 11.

The Office Action states that the maximum magnitude of the current density on the bus of the circuit of FIG. 2 of Galambos is decreased by VCC/25E. Applicants respectfully disagree. The maximum magnitude of current density of the bus of the circuit of FIG. 2 of Galambos is not reduced at all by resistor 25E. In the circuit of FIG. 2 of Galambos, the maximum magnitude of current density on the bus is equal to the tail current, and is not reduced by VCC/25E.

Claims 12, 14, and 17-19 are each respectfully submitted to be allowable at least because they depend from Claim 11.

Additionally, Claim 14 is respectfully submitted to be allowable at least because Galambos fails to disclose, "**each** of the plurality of transconductance circuits has an output coupled to a **separate** one of the plurality of current source circuits" (emphasis added), as recited in Applicants' Claim 14. If each transconductance circuit of the circuit of FIG. 2 of Galambos were coupled to a separate "current source" [sic] then there would have to be at least as many "current sources" [sic] as transconductance circuits of the circuit of FIG. 2 of Galambos. First there is the problem that the Office Action is referring to the loads (resistors 25A-25F) of the circuit of FIG. 2 of Galambos as current sources, but that problem has already been discussed. Even if the loads could be construed as current sources, the claim limitations of Applicants' Claim 14 would not be met by the circuit of FIG. 2 of Galambos. The circuit of FIG. 2 of Galambos is a folded architecture, which means that the multiple transconductance circuits share a single load. In the differential case, multiple

differential transconductance circuits share a single differential load. For example, 24A, 24C, 24E, and 24G of the circuit of FIG. 2 of Galambos are differential transconductance circuits that share a single differential load 25E/25F. Even assuming arguendo that differential load 25E/25F of the circuit of FIG. 2 of Galambos could be construed as a differential current source, there would need to be four differential current sources, one each for diff pairs 24A, 24C, 24E, and 24G of the circuit of FIG. 2 of Galambos, in order to meet the limitations of Applicants' Claim 14. For at least these reasons, it is respectfully submitted that Claim 14 is in condition for allowance.

Claim 17 is respectfully submitted to be allowable at least because Galambos fails to disclose, "the first local current is differential", as recited in Applicants' Claim 17, in conjunction with the limitations of Claim 11 from which Claim 17 depends. The Office Action states, with regard to FIG. 2 of Galambos, "the first local current (VCC/25E) is differential". Applicants respectfully disagree. The current through resistor 25E of the circuit of FIG. 2 of Galambos is not differential. The differential current through the differential load 25E/25F of the circuit of FIG. 2 of Galambos is differential. But, in Galambos, if this were used as the differential current source, then there would be no "another current source that is coupled to an output of another transconductance circuit in the portion of transconductance circuits" as recited in Applicants' Claim 11. Claim 11 also recites that "a first bus of the plurality of buses is coupled to a portion of the plurality of transconductance circuits", so that none of the resistors 25A-25D of the circuit of FIG. 2 of Galambos could be used as "another current source" since resistors 25A-25D of the circuit of FIG. 2 of Galambos are coupled to different buses than the differential bus to which resistors 25E and 25F of the circuit of FIG. 2 of Galambos are coupled.

Additionally, Claim 19 is respectfully submitted to be allowable at least for reasons similar to those stated above with regard to Claim 10.

The rejection to Claim 15 is respectfully traversed. Claim 15 is respectfully submitted to be allowable at least for reasons similar to those stated above with regard to Claim 11 and with regard to Claim 14. Additionally, Claim 15 is respectfully submitted to be allowable at least because Galambos fails to disclose, "each of the plurality of current source circuits shares a bias line in common with one of the load current sources", as recited in Applicants' Claim 15.

Firstly, what the Office refers to as "current source circuits" in the circuit of FIG. 2 of Galambos are only resistors, and do not have bias lines at all, therefore they cannot share a bias line in common with load current sources. The claim limitation could be met, for example, by a current mirror current sources, with a current mirrors have their gates connected together, this common gate node being the bias line, with the load including a current mirror with a common gate node, with all of these gates being tied to the bias line, so that basically the current mirror current source providing current to the bus and the current mirror in the load all form one current mirror.

However, the resistors 25A-25F of the circuit of FIG. 2 of Galambos do not have a bias line and therefore cannot share a bias line in common with current sources in the load.

The rejections to Claims 20-28 are respectfully traversed. Claim 20 is respectfully submitted to be allowable at least for reasons similar to those stated above with regard to Claim 11. Claims 21, 23-26, and 28 are respectfully submitted to be allowable at least for reasons similar to those stated above with regard to Claim 1. Claim 22 is respectfully submitted to be allowable at least because it depends from Claim 21. Claim 27 is respectfully submitted to be allowable at least because it depends from Claim 26.

Additionally, Claim 23 is respectfully submitted to be allowable at least because Galambos fails to disclose, "a load circuit that is coupled to the bus, wherein the load circuit is configured to provide an output voltage such that the output voltage is substantially equal to the multiplicative product of: the bus current, and an impedance of the load circuit", as recited in Applicants' Claim 23, in conjunction with the other limitations of Applicants' Claim 23. As previously discussed, resistor 25E of the circuit of FIG. 2 of Galambos is not a current source. However, even if resistor 25E of the circuit of FIG. 2 of Galambos could be construed as a current source, the claims limitations of Applicants' Claim 23 would not be met by the circuit of FIG. 2 of Galambos. The Office Action stated that the comparators 26 and 28 of the circuit of FIG. 2 of Galambos are the load. However, these comparators do not meet the limitation "the load circuit is configured to provide an output voltage such that the output voltage is substantially equal to the multiplicative product of: the bus current, and an impedance of the load circuit". Rather, in the circuit of FIG. 2 of Galambos, it is the resistors 25A-25F that each act as a load circuit that provides a voltage that is substantially equal to the multiplicative product of the bus current and the impedance of the resistor.

However, if the Office used resistors 25A-25F of the circuit of FIG. 2 of Galambos as load circuits, there would then be no "first current source circuit" as recited in Applicants' Claim 23.

## CONCLUSION

It is respectfully submitted that each of the presently pending claims (Claims 1-3, 6-12, and 14-28) are in condition for allowance and notification to that effect is requested. Examiner is invited to contact the Applicants' representative at the below-listed telephone number if it is believed that the prosecution of this application may be assisted thereby. Although only certain arguments regarding patentability are set forth herein, there may be other arguments and reasons why the claimed invention is patentable. Applicant reserves the right to raise these arguments in the future.

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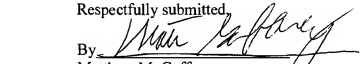
Respectfully submitted,

By 

Matthew M. Gaffney
Registration No.: 46,717
DARBY & DARBY P.C.
P.O. Box 5257
New York, New York 10150-5257
(206) 262-8910
(212) 527-7701 (Fax)
Attorneys/Agents For Applicant